

CLAIMS

1. An apparatus for allocating power among reverse link power control channels on a communications link between a first station and a plurality of second stations, comprising:

means for attempting to receive forward link quality information from each of the plurality of second stations;

means for determining the relative quality of a plurality of reverse link power control channels, each such reverse link power control channel being associated with one of the plurality of second stations, the determination being based upon the forward link quality information received from the associated second stations; and

means for allocating more power to a reverse link power control channel associated with a lower quality forward link than to a reverse link power control channel associated with a higher quality forward link.

2. An apparatus for allocating power to a power control channel which is embedded within a data channel, comprising:

means for determining the amount of power that is required to reliably transmit information over the power control channel to each of a plurality of remote stations;

means for allocating the amount of power required to transmit the power control channel to each of the remote stations based upon the determined power requirements; and

means for allocating the amount of power required to transmit each data channel based on the total number of data channels and the total available power, independent of the amount of power allocated to each power control channel.

3. An apparatus for determining the amount of power that is required to transmit power control information from a first station to a second station of a communication system, comprising:

means for receiving a first data rate control message from the second station during a first period of time;

means for determining whether the first data rate control message is directed to the first station;

means for storing the first data rate control message on a short list;

means for receiving a second data rate control message from the second station during a second period of time;

means for determining whether the second data rate control message is directed to the first station;

means for determining the amount of power which would be required to transmit power control information from the first station to the second station during the first period of time based upon the first data rate control message if the second data rate control message is not directed to the first station; and

means for determining the amount of power that is required to reliably transmit power control information from the first station to the second station during the second period of time based upon the amount of power determined to be required to reliably transmit power control information from the first station to the second station during the first period of time.

4. The apparatus of claim 3, further comprising:

means for storing the second data rate control message on the short list;

means for storing data rate control messages on the short list if received within a first predetermined amount of time, and storing data rate control messages on a long list if received within a second predetermined amount of time, the second predetermined amount of time being longer than the first predetermined amount of time;

means for determining whether any of the messages on the short list are directed to the first station;

means for determining the amount of power required to transmit the power control information from the first station to the second station based upon the most recent data rate control message directed to the first station if any of the data rate control messages stored on the short list are directed to the first station;

means for determining the amount of power required to reliably transmit power control information from the first station to the second station during the second period

of time based upon each of the power control messages directed to the first station and stored on the long list if none of the data rate control messages stored on the short list are directed to the first station and at least one of the data rate control messages stored on the long list are directed to the first station.

5. The apparatus of claim 4, wherein the means for determining the amount of power required to reliably transmit power control information from the first station to the second station during the second period of time based upon each of the power control messages directed to the first station and stored on the long list further comprises:

means for calculating an average forward link quality based upon the values of each data rate control message stored on the long list and directed to the base station;
and

means for determining the amount of power required to reliably transmit power control information from the first station to the second station based upon the average forward link quality.

6. An apparatus for allocating power among reverse link power control channels on a communications link between a first station and a plurality of second stations, comprising:

means for attempting to receive forward link quality information from each of the plurality of second stations;

means for determining the relative quality of a plurality of reverse link power control channels, each such reverse link power control channel being associated with one of the plurality of second stations, the determination being based upon the forward link quality information received from the associated second stations;

means for allocating more power to a reverse link power control channel associated with a lower quality forward link than to a reverse link power control channel associated with a higher quality forward link;

means for determining from information received from one of the plurality of second stations whether more power, less power, or the same amount of power is

required on the forward link between the one of the plurality of second stations and the first station; and

means for allocating no power to a reverse power control channel associated with one of the plurality of second stations communicating with the first station over a forward link for which the same amount of reverse link power is required.